Quality Control Certificate

Product:	**Alumina Column**
Product No.:	20087
Lot No.:	**718634**

Storage Recommendations: Store the column at room temperature below 25°C

Description: The Alumina Column is part of a 3-column setup used for the sample preparation of environmental-, food- / feed- and similar matrices with DEXTech systems from LCTech for the analysis of polychlorinated dibenzo-p-dioxins (PCDD), polychlorinated dibenzofurans (PCDF) and polychlorinated biphenyl (PCB) congeners.

Quality Control Release Inspection and Test Specification

Test Procedure: A solvent blank, spiked with quantification standard has been cleaned on a DEXTech Plus system, spiked with recovery standard, evaporated with the D-EVA and has been quantified with a HRGC/HRMS DFS from Thermo Fisher Scientific at a resolution of R > 10000.

Results Blank Value:

PCDD/F-TEQ:	0,09	pg/column
	(crit: < 0,7	pg/column)
dl-PCB-TEQ:	0,0489	pg/column
	(crit: < 0,05	pg/column)
Sum Total PCB:	10,9	pg/column
	(crit: < 300	pg/column)

Results Recoveries:

PCDD/F	87	to	119	%	(crit:	70	to	120	%)
PCB	79	to	107	%	(crit:	70	to	120	%)

This is to certify that the Alumina Column, Lot 718634, passed the required test specifications and is released for sale.

date: 11.08.2023   sign.: *M. Bradis*

The company LCTech GmbH is certified according to ISO 9001

Hazards:	NOT FOR HUMAN OR DRUG USE!
	The Alumina Column is designed and prepared for usage with the Universal/standard & Smart Column and Carbon Column from LCTech and for laboratory use only. This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion, all procedures should be carried out with suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed according to national and regional regulations.
Quality Control:	All ingredients are traceable to certified lots of our supplier. In addition, any ingredient with a new lot will be checked on contamination and efficiency before releasing for production. Monitoring the ongoing production, several columns are chosen at random day for analysis to check on contamination and efficiency.
Quality Management:	This product was produced using a Quality Management System registered to the ISO 9001:2015 (DEKRA)
Documentation / Data Attached:	table 1 & 2: blankvalues of PCDD/F and PCB table 3 & 4: 13C-Recoveries of PCDD/F and PCB
Analytics	This is to certify that the Alumina Column, Lot , passed the required test specifications and is released for sale.
Remarks	n/a

Results:

Lockmass check: No significant disturbances, or indicators for contaminations are detected.

Blanks: n=   8

Table 1: PCDD/F blank

	[pg/column]
2,3,7,8-TCDF	<dl
1,2,3,7,8-PeCDF	<0,045
2,3,4,7,8-PeCDF	<0,081
1,2,3,4,7,8-HxCDF	<0,027
1,2,3,6,7,8-HxCDF	0,022
2,3,4,6,7,8-HxCDF	<dl
1,2,3,7,8,9-HxCDF	<dl
1,2,3,4,6,7,8-HpCDF	0,09
1,2,3,4,7,8,9-HpCDF	0,018
1,2,3,4,6,7,8,9-OCDF	0,06
2,3,7,8-TCDD	<dl
1,2,3,7,8-PeCDD	<dl
1,2,3,4,7,8-HxCDD	0,157
1,2,3,6,7,8-HxCDD	<0,108
1,2,3,7,8,9-HxCDD	0,033
1,2,3,4,6,7,8-HpCDD	0,14
1,2,3,4,6,7,8,9-OCDD	1,09

sample amount [pg/column]

Table 2: PCB blank

	[pg/column]
PCB-#28	2,12
PCB-#52	1,87
PCB-#101	1,16
PCB-#153	2,02
PCB-#138	1,93
PCB-#180	1,755
PCB-#81	0,56
PCB-#77	0,5213
PCB-#126	0,73
PCB-#169	0,35
PCB-#123	0,39
PCB-#118	1,27
PCB-#114	0,384
PCB-#105	0,79
PCB-#167	0,574
PCB-#156	0,906
PCB-#157	0,5
PCB-#189	0,861

sample amount [pg/sample]

PCDD/F TEQ (2005)	**[pg/column]**
lower bound	0,06
upper bound	0,09

PCB-TEQ	[pg/column]
lower bound	0,0489
upper bound	0,0489
Sum DIN	10,9

Table 3: PCDD/F recoveries

	[%]	RSD [%]
2,3,7,8-TCDF	96	7
1,2,3,7,8-PeCDF	100	6
2,3,4,7,8-PeCDF	102	12
1,2,3,4,7,8-HxCDF	87	9
1,2,3,6,7,8-HxCDF	104	8
2,3,4,6,7,8-HxCDF	111	6
1,2,3,7,8,9-HxCDF	108	6
1,2,3,4,6,7,8-HpCDF	110	6
1,2,3,4,7,8,9-HpCDF	100	6
1,2,3,4,6,7,8,9-OCDF	104	4
2,3,7,8-TCDD	92	5
1,2,3,7,8-PeCDD	103	7
1,2,3,4,7,8-HxCDD	118	8
1,2,3,6,7,8-HxCDD	97	7
1,2,3,7,8,9-HxCDD	119	7
1,2,3,4,6,7,8-HpCDD	111	4
1,2,3,4,6,7,8,9-OCDD	100	3

PCDD/F 13C Recoveries [%]

Table 4: PCB recoveries

	[%]	RSD [%]
PCB-#28	91	15
PCB-#52	79	20
PCB-#101	98	10
PCB-#153	98	11
PCB-#138	94	8
PCB-#180	91	5
PCB-#81	99	0
PCB-#77	106	0
PCB-#126	107	0
PCB-#169	97	0
PCB-#123	102	3
PCB-#118	101	4
PCB-#114	99	4
PCB-#105	92	6
PCB-#167	100	3
PCB-#156	95	6
PCB-#157	95	6
PCB-#189	87	4

PCB 13C Recoveries [%]